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Agile Governance in Strategic Infrastructure Projects: Evidence from the Palembang-Banyuasin Toll Road Development

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A B S T R A C T

This study aims to examine how agile governance is practiced in the development of the Palembang-Banyuasin Toll Road as one of Indonesia's National Strategic Projects. The research responds to the need for adaptive governance approaches in infrastructure projects characterized by regulatory uncertainty, land acquisition disputes, and multi-actor coordination challenges. A qualitative case study design was employed using in-depth interviews, field observations, and document analysis involving government agencies, toll road enterprises, contractors, and affected communities. Data were analyzed thematically based on dimensions of agile governance: adaptivity, responsiveness, collaboration, transparency, accountability, and innovation. The findings show that agile governance was not formally institutionalized but emerged pragmatically as a situational response to project complexity. Adaptivity appeared in flexible decision-making and schedule adjustments. Responsiveness was reflected in dialogue-based conflict resolution with local communities. Collaboration was evident in coordination among the central government, local authorities, private actors, and communities. However, transparency and accountability remained largely administrative, while governance innovation was limited to flexible coordination forums and digital monitoring tools. The study concludes that governance in the Palembang-Banyuasin Toll Road project can be understood as hybrid agile governance, combining adaptive and collaborative practices with conventional hierarchical procedures. Rather than claiming a fully developed new framework, the study proposes Hybrid Agile Infrastructure Governance as an emerging conceptual proposition for analyzing how adaptive practices operate within formal governance structures in strategic infrastructure projects.

INTRODUCTION

Strengthening national market integration. Adequate transportation infrastructure has been proven to reduce logistics costs, increase the mobility of goods and services, and open access to new centers of economic growth. In developing countries, investment in road infrastructure has a significant impact on regional productivity and equitable development (Ziberi & Miftari, 2021). Khanani and Prus & Sikora (Khanani et al., 2021; Prus & Sikora, 2021) state that the quality of transportation infrastructure is closely linked to a region's economic competitiveness and spatial efficiency. The Indonesian government has positioned toll road development as part of its National Strategic Projects (Proyek Strategis Nasional/PSN) to accelerate economic transformation and regional development.

In South Sumatra, the Palembang-Banyuasin Toll Road plays a strategic role, connecting Palembang City with the surrounding hinterland and new economic zones. This toll road is expected to streamline the flow of goods, improve access to industrial and agricultural areas, and encourage more equitable economic growth. Toll road infrastructure also has the potential to create a multiplier effect through increased investment, expanded employment opportunities, and the development of new residential centers (Chen et al., 2021; Zhang & Cheng, 2023). According to Anbumozhi et al., and Wardani (Anbumozhi et al., 2023; Wardani, 2025) Transportation infrastructure development in developing countries directly contributes to long-term economic growth and reduced inter-regional disparities.

Toll road development often faces complex governance challenges, particularly in land acquisition (Huda et al., 2024), social conflict (Irawan et al., 2024), and coordination between actors (Hakim et al., 2024). The land acquisition process frequently gives rise to disputes due to differing perceptions of compensation value, socio-economic impacts, and community resistance to changes in their living space (Großmann, 2024; Muiruri & Abdel Aziz, 2025). Large infrastructure projects involve numerous stakeholders, including the central government, local governments, business entities, contractors, financing institutions, and affected communities (Anguelov, 2024; Prakash et al., 2023). Flyvbjerg (2014) emphasized that large-scale infrastructure projects are highly susceptible to delays, cost overruns, and conflicts of interest due to weak governance and overly optimistic planning (Ammar et al., 2022).

In practice, conventional governance approaches, which are hierarchical, bureaucratic, and based on formal procedures, are often ineffective at addressing the uncertain dynamics of infrastructure projects (Rauzana & Dharma, 2022). Regulatory changes, local political dynamics, technical constraints on the ground, and the need for rapid policy adjustments demand a more flexible governance system (Hidayat et al., 2025). Rigid institutional structures tend to slow decision-making and limit innovative problem-solving. The Røsok et al. (2023) emphasize that modern infrastructure governance requires cross-sectoral coordination capacity, adaptive risk management, and the ability to respond quickly and accountably to policy changes.

Agile governance has emerged as an increasingly relevant alternative approach. Agile governance emphasizes an institution's ability to adapt to change, respond quickly to stakeholder needs, and encourage cross-actor collaboration through continuous learning (Bonomi Savignon & Costumato,

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2024). This approach initially developed in the digital sector and innovation management, but is now increasingly applied in public administration and development governance. Luna et al. (2015) explain that agile governance is the capacity of organizations and institutions to keep pace with social, technological, and economic change through adaptive and participatory decision-making processes. This concept is relevant to the application in toll road construction, which is highly complex. Figure 1 shows that existing agile governance research is heavily concentrated in technology, government, organizational management, and crisis response, while infrastructure governance remains relatively underexplored.

Figure 1 is used as an exploratory literature-mapping illustration rather than as standalone evidence of the research gap. The visualization indicates the concentration of agile governance discussions around technology, government, organizational management, and crisis response. Because the available manuscript does not report the database, search string, number of documents, publication period, or VOSviewer settings used to generate the map, the figure should be interpreted cautiously and primarily as a contextual illustration. A complete bibliometric protocol should be reported if the figure is intended to support a systematic claim about the literature gap.

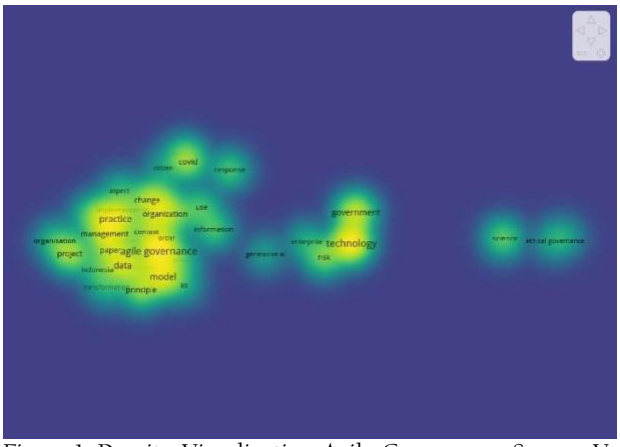


Figure 1. Density Visualization Agile Governance. Source: Vos Viewer, 2026

However, the theoretical gap is not only the limited application of agile governance to physical infrastructure. Infrastructure megaprojects create a distinctive governance tension: project actors must adapt rapidly to uncertainty, land disputes, technical constraints, and changing stakeholder demands while remaining subject to rigid legal authority, formal approvals, and public accountability. Existing agile governance literature explains adaptability and responsiveness, but provides less explanation of how these practices coexist with hierarchical accountability in highly regulated infrastructure settings. This tension provides the analytical basis for examining hybrid governance rather than treating agility as a replacement for conventional hierarchy.

Empirical studies on the application of agile governance in physical infrastructure projects, particularly toll roads in Indonesia, are still relatively limited (Rohman, 2022). Most previous studies have focused more on regulatory, financing, and formal institutional aspects, thus providing little explanation of how adaptability, responsiveness, and collaboration are implemented at the project implementation level. This study aims to analyze agile governance practices in the construction of the Palembang-Banyuasin Toll Road, a National Strategic Project (PSN). This study is expected to provide theoretical contributions to the development of infrastructure governance studies and to offer practical recommendations for more adaptive, responsive, and sustainable toll road project management in Indonesia.

Infrastructure project governance refers to the set of institutions, rules, and decision-making processes that govern the planning, financing, construction, and management of public infrastructure (Mircea & Nguyen, 2023). Project governance relates not only to the technical aspects of construction but also to coordination between actors, the distribution of authority, and public accountability (Nurhakim & Lestari, 2025). In large-scale projects, governance is a crucial factor due to the high levels of investment, risk, and social impact they entail.

Large infrastructure projects are generally complex, involve many actors, require long timeframes, and are characterized by high levels of uncertainty. Huemann & Turner (2024) shows that large-scale infrastructure projects often experience delays, cost overruns, and conflict due to weak governance and unrealistic decision-making. In developing countries, these challenges are exacerbated by limited institutional capacity, fragmented authority, land acquisition issues, and local political dynamics.

Agile governance is a governance approach that emphasizes an institution's ability to adapt quickly to change, uncertainty, and the demands of a dynamic environment. This concept has its roots in agile management in software development and has expanded into the realm of public policy. Luna et al. (2015) define agile governance as the ability of organizations and government systems to dynamically adjust processes, structures, and policies to achieve public goals effectively.

Unlike conventional governance, which tends to be bureaucratic and procedural, agile governance places flexibility, continuous learning, and rapid response at its core. The main principles of agile governance by Kaufman (2020) include: adaptivity, namely the ability to adjust policies according to changing contexts; responsiveness, the ability to respond quickly to stakeholder needs; multi-actor collaboration, cooperation between government, the private sector, and the community; transparency and accountability; and innovation in decision-making. (Hill & Hupe, 2021) emphasize that modern institutions require adaptive capacity to survive in uncertain policy environments.

The application of agile governance is relevant in infrastructure projects because toll road construction frequently faces regulatory changes, financing issues, land disputes, and social conflicts. This approach allows for rapid adjustments to project strategies without being hampered by rigid bureaucracy (Celestin et al., 2024). In land acquisition issues, agile governance encourages dialogue, negotiation, and collaborative solutions with affected communities. The dynamics of local actors such as local governments, political elites, and community groups also influence toll road projects. In situations like these, agile governance strengthens coordination, reduces policy fragmentation, and increases project legitimacy. Compared to conventional hierarchical governance, agile governance offers a more dynamic, contextual, and participatory approach (Bonomi Savignon & Costumato, 2024).

This study positions agile governance as a mechanism that bridges project uncertainty with the effectiveness of infrastructure project governance (Mircea & Nguyen, 2023).

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Uncertainty in toll road projects includes policy changes, land conflicts, and inter-actor dynamics. These pressures are addressed through agile governance practices, including policy adaptability, responsiveness to stakeholders, multi-actor collaboration, transparency, and innovative decision-making. These practices, in turn, influence project governance performance, as evidenced by the smoothness of construction, effective coordination, and the ability to resolve conflicts constructively (McKinsey & Company, 2022). The effectiveness of toll road projects is determined not only by formal regulations but also by actors' ability to apply agile governance principles amid complexity and uncertainty (Tomaževič et al., 2023). This framework serves as the basis for analyzing research on the Palembang-Banyuasin Toll Road development.

METHOD

This research uses a qualitative case study approach to gain a deep understanding of governance practices in the construction of the Palembang-Banyuasin Toll Road. The qualitative approach was chosen because it can explain the processes, meanings, and interactions among actors in a complex social and institutional context. According to Creswell and Poth (2018) Qualitative research is effective for exploring phenomena that require contextual and interpretive understanding. The case study design was used because the research focuses on a single case: the Palembang-Banyuasin Toll Road project as a National Strategic Project. Yin (2016) states that case studies are appropriate for examining contemporary phenomena in real-life contexts, especially when the boundaries between phenomenon and context are not clearly visible.

The research location is the Palembang–Banyuasin Toll Road construction project in South Sumatra Province. This project was chosen for its strategic value in improving regional connectivity and driving economic growth, even as it faces complex governance challenges. Research subjects were selected using purposive sampling, based on their level of involvement and knowledge of the project. Key informants included local government officials, toll road operators, implementing contractors, and affected community leaders. The available manuscript does not report the final number and distribution of informants; these details should be inserted from the fieldwork records rather than inferred. Likewise, the fieldwork period, number and duration of interviews, and the basis used to determine information saturation should be reported to make the empirical design transparent.

Patton (2014) explains that purposive sampling allows researchers to obtain the most relevant and information-rich informants for the research focus. For methodological transparency, the final manuscript should also specify the fieldwork period and interview procedures, including the approximate duration of interviews and how interview termination or saturation was determined. Because these details are not reported in the current manuscript, they are intentionally not fabricated in this revision. Ethical procedures should also be stated, including how informed consent was obtained, how participant identities were protected, and whether institutional ethical approval was required or obtained.

Data collection was conducted through three main techniques (W. J. Creswell & Creswell, 2018). First, in-depth, semi-structured interviews to explore informants' experiences, perceptions, and governance practices. Second, field observations to understand the dynamics of coordination, interactions between actors, and empirical conditions at the project site. Third, document analysis, including regulations, project reports, meeting minutes, and media reports. The use of multiple data sources is crucial for enriching the information and increasing the validity of the findings. Denzin & Lincoln (2011) emphasized that combining various data collection techniques enables a more comprehensive understanding of social phenomena.

The data were analyzed using thematic analysis, with the dimensions of agile governance adaptivity, responsiveness, multi-actor collaboration, transparency, accountability, and policy innovation serving as the initial deductive coding framework. The analysis process involved transcription, coding, theme categorization, comparison across sources, and interpretation. At the same time, coding remained open to inductive themes that were not fully captured by the initial dimensions. In particular, recurring patterns concerning the coexistence of formal hierarchical procedures with flexible coordination, negotiation, and adjustment were examined as an emergent theme of hybrid governance. Braun and Clarke (2021) explain that thematic analysis is a systematic method for identifying, analyzing, and interpreting patterns of meaning in qualitative data. In this study, the analysis was conducted iteratively by comparing interviews, observations, and documents through source triangulation.

To strengthen the traceability of interpretation, coding should link each analytical claim to its empirical source (interview, observation, or document) and to the relevant agile-governance dimension. The final manuscript should provide at least a small number of representative quotations or clearly identified documentary excerpts for each major analytical theme. Where quotations or documentary identifiers are not available in the present file, they should be inserted from the original field materials rather than created retrospectively.

Data validity is maintained through four qualitative research criteria: credibility, transferability, dependability, and confirmability (Anney, 2014). Credibility is achieved through data triangulation and intensive researcher involvement. Transferability is achieved through a detailed description of the research context. Dependability is maintained through systematic documentation of the research process, while confirmability is achieved by ensuring that findings are based on empirical evidence. Lincoln (2001) emphasized that these four criteria are the primary standards for ensuring the quality and reliability of qualitative research results. With this approach, research is expected to produce valid findings and contribute to the development of agile governance studies in strategic infrastructure projects.

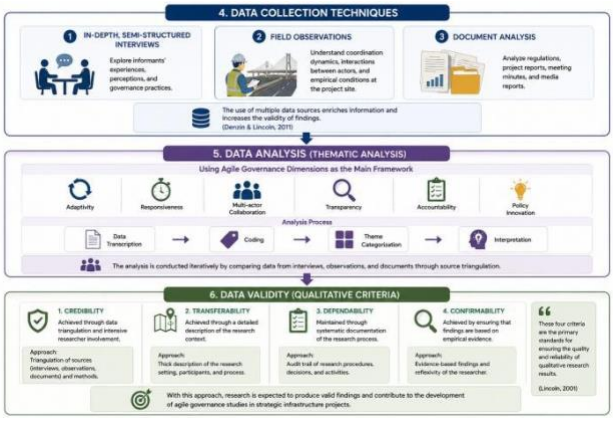


Figure 2. Research Methodology Framework: Data Collection Techniques, Thematic Analysis, and Qualitative Validity Criteria

in the Study of Agile Governance in the Palembang-Banyuasin Toll Road Project. Source: researcher, 2026.

Figure 2 illustrates the integrated research methodology, comprising data collection through interviews, observations, and document analysis; thematic analysis grounded in agile governance dimensions; and validation using the credibility, transferability, dependability, and confirmability criteria.

RESULTS AND DISCUSSION

The results of this study indicate that the dynamics of infrastructure development governance are not solely determined by the technical capacity of project implementation but also by the institutional capacity to coordinate among actors, respond to changing conditions on the ground, and maintain policy legitimacy amid the complexity of emerging interests. Based on field findings, the implementation process demonstrates a pattern of policy adaptation, stakeholder negotiation, and efforts to expedite the resolution of administrative and social obstacles. These conditions emphasize that development success is highly dependent on responsive, collaborative, and flexible governance. Therefore, the results of this study provide an empirical overview of the importance of a more adaptive governance approach for strategic development. The details are described as follows:

To strengthen the empirical basis of the findings, the discussion below distinguishes between observed or reported evidence and the researchers' interpretation. The analytical sequence is therefore: empirical evidence from interviews, observations, or documents → interpretation of the governance practice → connection with agile governance theory. Representative quotations and documentary identifiers should be inserted from the field records where available.

Adaptive and Collaborative Governance Practices

The research results show that the construction of the Palembang-Banyuasin Toll Road reflects agile governance practices through high adaptability to project dynamics and enhanced collaboration among stakeholders. Adaptability is evident in project stakeholders' ability to adjust management strategies in response to regulatory changes, land acquisition issues, and technical uncertainties that arise during construction. In the context of infrastructure projects, the ability to make rapid adjustments is crucial for preventing project delays and cost overruns.

Adaptability is also evident in adjustments to financing structures and budget planning when fiscal regulations or national financing schemes are revised. Local governments, toll road operators, and technical teams coordinate intensively to ensure project continuity. This mechanism reflects more dynamic governance than conventional models, which tend to be top-down and rigid.

In addition to adaptability, the research findings demonstrate the importance of multi-actor collaboration as a key foundation for project management. Construction implementation involves the central government, local governments, toll road operators, contractors, and the community in a relatively fluid coordination process. Collaboration is evident in the development of work schedules, technical decision-making, conflict resolution, and project risk mitigation.

Coordination forums, cross-sector technical meetings, and steering committees served as key platforms for information exchange and alignment of interests between stakeholders. In several cases, when land acquisition conflicts escalated, joint forums involving the government, contractors, and communities led to a more acceptable negotiating approach for all parties. These findings demonstrate that project success hinges not solely on the capacity of a single institution but on the ability to build collective synergy. The dimensions of adaptability and collaboration demonstrate that governance of the Palembang-Banyuasin Toll Road project is moving toward a more responsive, flexible, and cross-sectoral collaboration model, a key characteristic of agile governance.

Responsive, Transparent, and Innovative Governance Mechanisms Research findings also indicate that agile governance practices are realized through responsiveness to local dynamics, strengthening transparency and accountability, and innovation in project governance. Responsiveness is evident in project actors' efforts to address community aspirations and anticipate social conflicts arising from toll road construction. When resistance arose regarding land compensation or the project's environmental impacts, the implementation team proactively held a public consultation forum involving community leaders, village officials, and other local stakeholders. This forum served not only as a medium for disseminating information but also as a space for dialogue and negotiation. Furthermore, a complaint handling mechanism was provided through a project hotline, community liaison teams, and regular public meetings.

This approach demonstrates that project governance is not solely technocratic, but also oriented toward community needs. The use of social impact surveys and regular community meetings demonstrates that the decision-making process is beginning to accommodate a bottom-up approach. This responsiveness has been shown to help reduce social resistance and strengthen the project's legitimacy in the eyes of the community. Transparency and accountability are demonstrated through the public dissemination of information on project progress, development risks, and social and environmental commitments through various communication channels. This openness helps reduce speculation, miscommunication, and potential conflict among stakeholders.

Accountability is also evident in internal audits, budget reporting, and periodic evaluations of technical project achievements. Community involvement in providing feedback also strengthens the social control function of the development process. These findings demonstrate that flexibility in agile governance is balanced by clear accountability mechanisms. The research findings demonstrate governance innovation using information systems for project progress monitoring, digital communication platforms to accelerate coordination, and flexible cross-sector forums. Technology is used to accelerate information flow, improve data accuracy, and support faster decision-making.

In addition to technological innovation, institutional innovation has emerged through the establishment of a coordination forum that regularly evaluates project progress and adjusts strategies in response to field conditions. These innovations help overcome traditional bureaucratic obstacles that have hampered response to project issues. Responsiveness, transparency, and innovation are key dimensions demonstrating that the governance of the Palembang–Banyuasin Toll Road has

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moved toward a more open, participatory, and adaptive project management model.

Agile Governance as an Adaptive and Collaborative Response in Infrastructure Projects

Research findings indicate that agile governance practices in the Palembang-Banyuasin Toll Road did not emerge as a fully formal and institutionalized governance model, but rather developed pragmatically in response to project complexity, policy uncertainty, and social dynamics on the ground. This aligns with the view that agile governance is not a rigid institutional blueprint but an adaptive approach that develops through learning, negotiation, and continuous adjustment to the implementation context (Luna et al., 2015; Mergel et al., 2018, 2021). In the context of large-scale infrastructure projects, such pragmatism is particularly relevant because megaproject environments are characterized by uncertainty, multiple stakeholders, and shifting regulatory conditions (Esposito & Terlizzi, 2023; Flyvbjerg, 2014). Agile governance in this case represents an emergent governance capacity rather than a formally codified administrative reform.

The adaptability dimension is evident in project actors' ability to adjust management strategies in response to regulatory changes, land acquisition challenges, and the need to accelerate project completion. Schedule revisions, renegotiation strategies, and flexible decision-making became crucial mechanisms for sustaining implementation momentum. This supports the view that adaptive governance is essential when public projects operate in volatile policy environments (Akther & Evans, 2024; Emerson & Gerlak, 2014). In project management studies, hybrid and agile approaches are increasingly recognized as more suitable for the delivery of complex infrastructure than purely linear models, as they enable faster recalibration and continuous problem-solving (Conforto & Amaral, 2016; Moreno et al., 2024; Praveen et al., 2025). Adaptability in this study is not merely a managerial preference but a prerequisite for maintaining project continuity under institutional pressure.

Responsiveness to local dynamics demonstrates how agile governance principles operate at the social level. Rapid responses to community complaints, the creation of dialogue forums, and the involvement of local leaders in conflict mediation indicate that project governance was not purely technocratic. Instead, implementation legitimacy depended on continuous interaction with affected communities. This finding is consistent with studies emphasizing that infrastructure governance increasingly requires transformative community engagement and social value creation, especially in public-private partnership settings (Afieroho et al., 2023). It also aligns with collaborative governance scholarship, which argues that public legitimacy is built through participation, deliberation, and shared problem-solving rather than unilateral state authority (Ansell & Gash, 2008; Bingham, 2011; Clark, 2021). In Indonesia, where land and community claims are often socially embedded, responsiveness becomes central to avoiding resistance and sustaining implementation.

Multi-actor collaboration was also a central finding of this study. Coordination among the central government, regional governments, toll road operators, contractors, and communities demonstrated a relatively fluid and cross-sectoral working pattern. From an agile governance perspective, this reflects a polycentric distribution of authority in which decision-making is dispersed rather than monopolized by a single institution. Such findings resonate with network governance theory, which views public problem-solving as increasingly dependent on interorganizational coordination and negotiated authority structures (Rhodes, 2006, 2017; Wang & Ran, 2023). Similarly, recent studies on interorganizational project governance highlight that infrastructure outcomes depend heavily on trust, coordination routines, and governance mechanisms across multiple actors (Valkokari et al., 2024; Wang & Ran, 2023).

The effectiveness of the Palembang-Banyuasin Toll Road governance system relied not only on formal mandates but also on relational capacity among actors. Transparency and accountability remain in a transitional stage. Although efforts to disseminate project information and provide progress reporting were more open than in traditional bureaucratic models, these practices still tended to be administrative, selective, and top-down. Within the agile governance framework, transparency should function not merely as procedural disclosure but as an enabler of collaboration, trust-building, and responsive decision-making (Peters & Pierre, 2006; Van Doeveren, 2011). The persistence of selective openness suggests that conventional bureaucratic legacies continue to shape governance behavior, even as adaptive practices emerge. Similar tensions between formalization and flexibility have been observed in contemporary public management reforms, where institutions seek innovation while remaining constrained by hierarchical accountability systems (Bonomi Savignon & Costumato, 2024; Kanon, 2024). The project appears to be in transition from conventional governance toward a more adaptive and networked model.

Contextual Limitations and Implications for Theory and Practice

Compared with previous studies on toll road project governance in Indonesia, this research demonstrates a shift in focus from formal regulatory aspects to actor adaptation and collaboration. Earlier studies generally positioned governance as a mechanism of control, procedural compliance, financing arrangements, and administrative accountability within public–private partnership and infrastructure delivery systems (Brinkerhoff & Brinkerhoff, 2011; Fauzan et al., 2023; Rohman, 2022). This study's findings indicate that successful implementation is largely determined by actors' ability to respond to change, negotiate emerging constraints, and collaborate beyond rigid formal structures. This supports contemporary governance perspectives that emphasize problem-solving capacity, relational coordination, and adaptive management over purely hierarchical command structures (Krogh & Triantafillou, 2024; Osborne, 2010; Yi & Qiu, 2025).

Agile governance practices in the Indonesian context still face several limitations. Heavy reliance on formal regulations, entrenched hierarchical bureaucratic culture, and institutional aversion to risk continue to hinder governance innovation. Such findings are consistent with the public administration literature, which shows that procedural rigidity often constrains responsiveness and experimentation in state institutions (Kanon, 2024; Pollitt & Bouckaert, 2017). In developing-country contexts, adaptive reforms frequently coexist with bureaucratic inertia rather than replacing it entirely (Akther & Evans, 2024). Agile governance in this project is better understood as hybrid governance, a combination of conventional governance structures and adaptive practices that emerge pragmatically in response to implementation challenges.

The emergence of this hybrid model is strongly influenced by the nature of national strategic projects, which demand ambitious targets, time certainty, and rapid coordination. These pressures encourage project actors to rely on informal channels, policy improvisation, accelerated coordination, and collaborative mechanisms when formal procedures are insufficiently responsive. This finding aligns with studies of megaproject governance that describe how changing regulatory environments and implementation complexity often require flexible adjustments beyond original procedural designs (Esposito & Terlizzi, 2023; Flyvbjerg, 2014; Revellino et al., 2024). Agile governance develops not solely through formal policy design, but through practical responses to operational realities on the ground.

The theoretical contribution should therefore be stated cautiously. The case does not by itself establish a general theory of infrastructure governance; rather, it provides a conceptual proposition that agile governance in regulated megaprojects may take a hybrid form. This proposition identifies a potentially useful analytical relationship between adaptive practices and hierarchical accountability and can be tested comparatively in future infrastructure cases.

Theoretically, this research contributes to the expansion of agile governance studies into the domain of physical infrastructure projects, whereas previous discussions have been concentrated mainly on digital government, public service innovation, and technology policy. Existing scholarship frequently associates agile governance with digital transformation, data systems, or service delivery modernization (Mergel et al., 2018, 2021; Mutiarin et al., 2024). This study demonstrates that the concept is equally relevant for explaining the dynamics of large infrastructure projects characterized by uncertainty, land conflicts, intergovernmental coordination problems, and strong actor interdependence. It also supports the broader argument that agile principles are increasingly transferable across sectors beyond software and information systems into construction and project environments (Beard et al., 2024; Conforto et al., 2014; Moreno et al., 2024).

Practically, this research demonstrates that the management of national strategic projects requires greater flexibility at the implementation level. The government needs to strengthen cross-actor collaboration mechanisms, increase responsiveness to affected communities, and promote substantive, rather than merely administrative, transparency. Thus, agile governance can serve as an alternative framework for increasing the effectiveness, legitimacy, and sustainability of strategic infrastructure projects in Indonesia.

This study has several limitations. First, it is based on a single infrastructure project, so the findings should not be generalized automatically to other National Strategic Projects or to developing countries as a whole. Second, the strength of the empirical claims depends on the depth and diversity of the interview, observation, and documentary materials available to the study. Third, the current manuscript does not provide sufficient detail on the number and distribution of informants, fieldwork period, interview duration, saturation procedure, or ethical procedures; these details should be completed from the original research records. Finally, the bibliometric visualization is treated cautiously because its database and search protocol are not fully reported. Future research can test the hybrid governance proposition through comparative multi-project studies and more systematic evidence protocols.

CONCLUSION

This study concludes that agile governance in the Palembang-Banyuasin Toll Road project operates not as a formal governance model but as a pragmatic, hybrid approach shaped by institutional constraints, stakeholder complexity, and implementation uncertainty. Its practice is reflected through adaptivity, responsiveness, multi-actor collaboration, limited transparency, and governance innovation that enable project actors to address land disputes, regulatory changes, and coordination challenges. The findings show that effective infrastructure governance depends not only on formal procedures, but also on the dynamic capacity of institutions to respond to changing conditions. Accordingly, the study recommends greater implementation flexibility, stronger collaborative platforms, and more meaningful stakeholder engagement. The main conceptual contribution is the proposition of Hybrid Agile Infrastructure Governance as an analytical lens for examining how adaptive practices coexist with hierarchical governance in strategic infrastructure projects. Given the single-case design, this proposition should be treated as an emerging conceptual contribution rather than a fully established framework for developing-country contexts.

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CRediT authorship contribution statement

Eddy Sarwono: Conceptualization, Methodology, Investigation, Formal analysis, Data curation, Writing – original draft, Project administration. Alfitri: Supervision, Validation, Writing – review & editing, Conceptualization. Ardiyan Saptawan: Methodology, Validation, Resources, Writing – review & editing, Supervision. Eddy Sarwono serves as the corresponding author and is responsible for communication with the journal.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this article.

Ethical Statement

This study was conducted in accordance with established ethical standards for qualitative research involving human participants. Informed consent was obtained from all informants prior to their involvement in interviews and research activities, and participant confidentiality was strictly maintained throughout the study.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declaration of Generative AI Use

During the preparation of this manuscript, the authors used Grammarly to assist with language editing, improving grammar, clarity, readability, and the overall presentation of the manuscript. All AI-generated outputs were carefully reviewed

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and revised by the authors. The authors take full responsibility for the scientific content, originality, accuracy, and integrity of this article.

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